

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Friday, February 05, 2016 10:14 AM
To: 'Matt Skinner'
Subject: RE: news update for Fri 02-05-16

Love the quote!

From: Matt Skinner [mailto:M.Skinner@occeemail.com]
Sent: Friday, February 05, 2016 9:49 AM
To: Matt Skinner
Subject: news update for Fri 02-05-16

Good morning.

Quote for the day: "When trouble arises and things look bad, there is always one individual who perceives a solution and is willing to take command. Very often, of course, that individual is insane. " (Dave Barry)

****Earthquake questions surface after Edmond mayor gives State of the City speech (NewsOK)**
<http://newsok.com/earthquake-questions-surface-after-edmond-mayor-gives-state-of-the-city-speech/article/5476953>

EARTHQUAKES

First research links California quakes to oil operations (AP)
http://www.tulsaworld.com/earthquakes/first-research-links-california-quakes-to-oil-operations/article_3ba7d6ec-58b8-5d2f-af9c-c70a8e6a9538.html

OIL AND GAS INDUSTRY

Obama to seek new tax on oil in budget proposal (Reuters) <http://www.reuters.com/article/us-usa-budget-oil-idUSKCN0VD2Q7>

Oil Rout Threatens Vicious Cycle for Economy (Wall Street Journal)
<http://www.wsj.com/articles/oil-rout-threatens-to-infect-broad-economy-1454616981>

Here's What Oil and Gas's Ugly 2015 Did to Business Investment (Wall Street Journal)
<http://blogs.wsj.com/economics/2016/02/03/heres-what-oil-and-gass-ugly-2015-did-to-business-investment/>

Collection of data from oil fields is cloaked in secrecy, security (NewsOK)
<http://newsok.com/collection-of-data-from-oil-fields-is-cloaked-in-secrecy-security/article/5476961>

Texas isn't scared of \$30 oil as drillers lower break-even costs (Bloomberg)
http://www.tulsaworld.com/washingtonpost/business/texas-isn-t-scared-of-oil-as-drillers-lower-break/article_6287a3e2-eccf-5d64-9b73-ed989b485fdf.html

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Monday, February 01, 2016 12:56 PM
To: Tim Baker
Subject: your interview

Not bad at all, good for you!

****Spike in earthquakes rattles Oklahoma (PBS)**

<http://www.pbs.org/newshour/bb/spike-in-earthquakes-rattles-oklahoma-oil-gas-industry/>

Nancy S. Dorsey
Environmental Scientist
Oklahoma Class II Program Manager
WQ-SG EPA Region 6
1445 Ross Ave. #1200
Dallas, TX 75202-2733
214-665-2294
FAX 214-665-2191

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Monday, February 01, 2016 12:02 PM
To: R6 6WQ-SG; Bates, William; Hildebrandt, Kurt; Lawrence, Rob
Subject: yet another earthquake clip from PBS - Tim Baker finally got interviewed

A few new quotes after about 2 minutes—by politicians.

****Spike in earthquakes rattles Oklahoma (PBS)**

<http://www.pbs.org/newshour/bb/spike-in-earthquakes-rattles-oklahoma-oil-gas-industry/>

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Wednesday, January 27, 2016 8:11 AM
To: Johnson, Ken-E; Dellinger, Philip
Cc: Bierschenk, Arnold; Susie McKenzie (b) (6)
Subject: FW: [NEWSENDER] - Your booming Earthquakes - Message is from an unknown sender
Attachments: Evidence for subterranean deflagration to detonation transition events near saltwater disposal wells in Oklahoma.pdf

I know what I know what my response to the hypothesis is. :-o

From: Charles Lord [mailto:C.Lord@occeemail.com]
Sent: Friday, January 22, 2016 3:09 PM
To: Dorsey, Nancy
Subject: FW: [NEWSENDER] - Your booming Earthquakes - Message is from an unknown sender

Cannot wait to hear what your engineers say about this one.

Thanks

From: Dana Murphy
Sent: Thursday, January 21, 2016 4:38 PM
To: Tim Baker; Charles Lord; Jim Marlatt
Cc: Teryl Williams; Tim Rhodes
Subject: FW: [NEWSENDER] - Your booming Earthquakes - Message is from an unknown sender

FYI...

Dana L. Murphy
Oklahoma Corporation Commissioner
2101 Lincoln Boulevard
Oklahoma City, OK 73105
d.murphy@occeemail.com
405-521-2267

From: Simonson, Stewart [mailto:stewart.simonson@amecfw.com]
Sent: Tuesday, January 19, 2016 3:47 PM
To: Dana Murphy
Subject: [NEWSENDER] - Your booming Earthquakes - Message is from an unknown sender

Dana,

After 3 years worth of independent research about yours and other earthquakes, I have a hypothesis (not peer reviewed) about the cause – I am a consulting engineer and have designed oil/gas & lots of other related systems over 29 years. You can pass this paper on to other researchers if you would like.

If the hypothesis is correct, it would allow additional ways to mitigate/reduce seismic activity around wells and might allow you to increase disposal volume again:

- 1) Do not allow the gravity disposal wells in the Arbuckle/other regions to pull in air (or pump any air into the well). Air + Natural Gas (5%-15% mixture) + ignition/spark = Seismic Boom!

- 2) Do not allow disposal well owner/operators to connect any electrical grounds at wellhead to the steel tubing/casing to prevent for grounding electrical charge that can conduct to the bottom of the bottom of the well. Carbon steel and brine are both very good electrical conductors and will distribute electrical potential (voltage). Well piping/design should be modified to prevent electrical conduction through pipe/tubing.

If anyone takes my research seriously they can contact me below. I could help with design changes (I filed a provisional patent application last week)

Just trying to help.

Stewart D. Simonson
Senior Project Manager
Amec Foster Wheeler E&C Services, Inc.
1979 Lakeside Parkway, Suite 400
Tucker, GA 30084 USA
Main: 770-688-2500
Direct: 770-688-2659
Mobile: 404-247-0178
Fax: 770-688-2501
stewart.simonson@amecfw.com



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Dorsey, Nancy

From: Dorsey, Nancy
Sent: Friday, January 15, 2016 8:54 AM
To: Hildebrandt, Kurt
Subject: RE: Agency plans 'larger approach' to western Okla. shaking

Just don't listen!

From: Hildebrandt, Kurt
Sent: Friday, January 15, 2016 8:53 AM
To: Dorsey, Nancy; Dellinger, Philip; Bates, William; Kobelski, Bruce; Johnson, Ken-E; Lawrence, Rob; Lawrence, Rob; Graves, Brian
Subject: RE: Agency plans 'larger approach' to western Okla. shaking

Written parodies are fine just don't send me any more singing ones. ☺

From: Dorsey, Nancy
Sent: Friday, January 15, 2016 8:21 AM
To: Hildebrandt, Kurt <Hildebrandt.Kurt@epa.gov>; Dellinger, Philip <dellinger.philip@epa.gov>; Bates, William <bates.william@epa.gov>; Kobelski, Bruce <Kobelski.Bruce@epa.gov>; Johnson, Ken-E <Johnson.Ken-E@epa.gov>; Lawrence, Rob <Lawrence.Rob@epa.gov>; Lawrence, Rob <Lawrence.Rob@epa.gov>; Graves, Brian <Graves.Brian@epa.gov>
Subject: RE: Agency plans 'larger approach' to western Okla. shaking

I thought you wanted the parodies stopped?

From: Hildebrandt, Kurt
Sent: Thursday, January 14, 2016 5:43 PM
To: Dellinger, Philip; Bates, William; Kobelski, Bruce; Dorsey, Nancy; Johnson, Ken-E; Lawrence, Rob; Lawrence, Rob; Graves, Brian
Subject: RE: Agency plans 'larger approach' to western Okla. shaking

I'm going to paraphrase **The Who** and say that "the pressure can reach for miles and miles..."

From: Dellinger, Philip
Sent: Thursday, January 14, 2016 5:34 PM
To: Bates, William <bates.william@epa.gov>; Kobelski, Bruce <Kobelski.Bruce@epa.gov>; Dorsey, Nancy <Dorsey.Nancy@epa.gov>; Johnson, Ken-E <Johnson.Ken-E@epa.gov>; Lawrence, Rob <Lawrence.Rob@epa.gov>; Hildebrandt, Kurt <Hildebrandt.Kurt@epa.gov>; Lawrence, Rob <Lawrence.Rob@epa.gov>; Graves, Brian <Graves.Brian@epa.gov>
Subject: RE: Agency plans 'larger approach' to western Okla. shaking

Appears there is gradual acknowledgement that disposal wells can influence pressure for miles.

From: Bates, William
Sent: Thursday, January 14, 2016 7:19 AM
To: Kobelski, Bruce; Dorsey, Nancy; Johnson, Ken-E; Lawrence, Rob; Dellinger, Philip; Hildebrandt, Kurt; Lawrence, Rob;

Graves, Brian

Subject: Agency plans 'larger approach' to western Okla. shaking

EARTHQUAKES:

Agency plans 'larger approach' to western Okla. shaking

[Mike Soraghan](#), E&E reporter

Published: Thursday, January 14, 2016

Oil and gas regulators directed more than two dozen disposal wells in western Oklahoma to curtail operations yesterday but say they are planning a "larger approach" in response to a series of larger-than-normal quakes in the area.

"The data available indicates that a much larger approach to the earthquakes in that entire part of northwestern Oklahoma is needed, and we have been working on such a plan," said Tim Baker, director of the Oklahoma Corporation Commission's Oil and Gas Division. "However, given the recent earthquake activity in the Fairview area, the plan announced today is a necessary step as part of this ongoing process."

Baker said the agency is telling well operators to resume operations gradually after power outages. Officials are concerned that there is a higher potential for earthquakes when power outages cause lots of disposal wells in an area to stop, then start again at the same time.

Under the initial plan for western Oklahoma, 27 disposal wells injecting into the Arbuckle formation in the Fairview area are to reduce disposal volumes. The total disposal volume reduction for the area in question is about 18 percent.

The area around Fairview was hit last week with some of the strongest quakes in years in the state, including magnitude 4.3 and 4.8 events only seconds apart ([EnergyWire](#), Jan. 8).

Scientists and state officials have tied a massive increase in the number of earthquakes in the state to wastewater disposal wells from oil and gas production. Researchers say favorably aligned faults have combined with production methods that result in unusually large volumes of wastewater creating the earthquake swarms.

William J. L. Bates

Geologist

U.S. EPA

Office of Ground Water & Drinking Water: Prevention Branch

202-564-6165

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Friday, January 15, 2016 8:35 AM
To: 'Matt Skinner'
Subject: RE: news update for Thurs 01-14-15 (includes previous)

Thanks Matt! No song was so bad it was good...though better with the sound off. ☺

Any chance of seeing these three articles?

****Data deluge: Corporation Commission says it's drowning in disposal well data (Journal Record)** <http://journalrecord.com/2016/01/12/data-deluge-corporation-commission-says-its-drowning-in-disposal-well-data-energy/>

****Broader view: Southside OKC lawmaker makes noise about earthquakes (Journal Record)** <http://journalrecord.com/2016/01/12/broader-view-southside-okc-lawmaker-makes-noise-about-earthquakes-capitol/>

**** Scientists: Cutting wastewater disposal to 2012 level might end quakes (Journal Record)** <http://journalrecord.com/2016/01/08/scientists-cutting-disposal-to-2012-level-might-end-quakes-energy/>

From: Matt Skinner [mailto:M.Skinner@occemail.com]
Sent: Thursday, January 14, 2016 11:13 AM
To: Matt Skinner
Subject: news update for Thurs 01-14-15 (includes previous)

Good morning.

Quote for the day: ““Give a man a fish, and you'll feed him for a day. Teach a man to fish, and he'll buy a funny hat. Talk to a hungry man about fish, and you're a consultant.”(Scott Adams)

**** Regulators order reduced injection well volumes after quakes (AP)** <http://bigstory.ap.org/article/713d0cf7e62e48639aa765e724533556/regulators-order-reduced-injection-well-volumes-after>

**** Recent swarm of Oklahoma earthquakes may be tied to power outages (Tulsa World)** http://www.tulsaworld.com/earthquakes/recent-swarm-of-oklahoma-earthquakes-may-be-tied-to-power/article_ed71fe5a-7791-51f6-be21-8952e2f32090.html

**** State Orders More Injection Well Reductions in Northwest Oklahoma (OK Energy Today)** <http://okenergytoday.com/2016/01/state-orders-more-injection-well-reductions-in-northwest-oklahoma/>

**** Oklahoma Corporation Commission limits 27 disposal wells following Fairview earthquakes (NewsOK)** <http://newsok.com/corporation-commission-limits-27-wells-following-quakes/article/5472309>

****Experts answer questions at earthquake summit (KOCO)** <http://www.koco.com/news/experts-answer-citizens-questions-at-koco-earthquake-summit/37426698>

Oklahoma Corporation Commission chairman pushes for reopening old Southwestern Bell case (NewsOK) <http://newsok.com/oklahoma-corporation-commission-chairman-pushes-for-reopening-old-southwestern-bell-case/article/5472365>

****Oklahoma assistant AG, Owasso resident criticize PSO's smart meter opt-out plan (NewsOK)** <http://newsok.com/oklahoma-assistant-ag-owasso-resident-criticize-psos-smart-meter-opt-out-plan/article/5472363>

**** Is bribery “repugnant” to the Oklahoma constitution? (KFOR)** <http://kfor.com/2016/01/14/is-bribery-repugnant-to-the-oklahoma-constitution/>

****Corporation Commission directs changes at 27 disposal wells near Fairview (Journal Record)** <http://journalrecord.com/2016/01/13/corporation-commission-directs-changes-at-27-disposal-wells-near-fairview-energy/>

****Data deluge: Corporation Commission says it’s drowning in disposal well data (Journal Record)** <http://journalrecord.com/2016/01/12/data-deluge-corporation-commission-says-its-drowning-in-disposal-well-data-energ/>

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**** Scientists: Cutting wastewater disposal to 2012 level might end quakes (Journal Record)** <http://journalrecord.com/2016/01/08/scientists-cutting-disposal-to-2012-level-might-end-quakes-energy/>

EARTHQUAKES

Logan County residents sue drillers over earthquake damage (Journal Record) <http://journalrecord.com/2016/01/13/logan-county-residents-sue-drillers-over-earthquake-damage-energy/>

New Oklahoma Earthquake parody (KFOR) <http://kfor.com/2016/01/13/group-creates-funny-parody-about-oklahoma-earthquakes-to-taylor-swift-song/>

OIL AND GAS INDUSTRY

SandRidge cuts 226 jobs at oilfield services company (NewsOK) <http://newsok.com/sandridge-cuts-226-jobs-at-oilfield-services-company/article/5472304>

Firefighters extinguish damaging Grady Co. fracking fire (KFOR) <http://kfor.com/2016/01/13/all-lanes-of-traffic-shut-down-due-to-large-oil-rig-fire/>

Continental Resources CEO sees oil rising to \$60 by year end (AP) <http://www.kansascity.com/news/business/national-international/article54541545.html>

Oklahoma's energy industry continues to suffer, according to Fed survey (NewsOK) <http://newsok.com/oklahomas-energy-industry-continues-to-suffer-according-to-fed-survey/article/5471501>

Regulators to give written reason for cutting oilfield fines (AP) <http://www.sunherald.com/news/business/article54107970.html>

Experts to study food safety of oilfield wastewater (AP) <http://www.montereyherald.com/article/zz/20160112/NEWS/160118858>

LEGISLATURE

Lawmakers' bills include fines for students who misbehave, electromagnetic pulse attacks (Tulsa World) http://www.tulsaworld.com/news/capitol_report/lawmakers-bills-include-fines-for-students-who-misbehave-electromagnetic-pulse/article f943d672-04cf-5c42-a07d-880cdf945a16.html

ALTERNATIVE ENERGY

Ruling is another setback to proposed Iowa wind energy line (AP) <http://www.washingtontimes.com/news/2016/jan/12/ruling-is-another-setback-to-proposed-iowa-wind-en/>

ELECTRIC GENERATION/TRANSMISSION

Hunt's Proposed Utility Takeover Rattles Texas Regulators (WSJ) <http://www.wsj.com/articles/hunts-proposed-utility-takeover-rattles-texas-regulators-1452721022>

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Friday, January 15, 2016 8:21 AM
To: Hildebrandt, Kurt; Dellinger, Philip; Bates, William; Kobelski, Bruce; Johnson, Ken-E; Lawrence, Rob; Lawrence, Rob; Graves, Brian
Subject: RE: Agency plans 'larger approach' to western Okla. shaking

I thought you wanted the parodies stopped?

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[Mike Soraghan](#), E&E reporter

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Corporation Commission's Oil and Gas Division. "However, given the recent earthquake activity in the Fairview area, the plan announced today is a necessary step as part of this ongoing process."

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William J. L. Bates
Geologist
U.S. EPA
Office of Ground Water & Drinking Water: Prevention Branch
202-564-6165

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Friday, January 15, 2016 8:19 AM
To: Foster, Nichole
Subject: RE: Emergency Reponse to Winter Storms 2015 - 2016

Thanks for checking Nichole, I appreciate it!

-----Original Message-----

From: Foster, Nichole
Sent: Friday, January 15, 2016 7:36 AM
To: Dorsey, Nancy
Cc: McCasland, Mark; Mlachak, Shirley
Subject: FW: Emergency Reponse to Winter Storms 2015 - 2016

Hi Nancy,

Looks like there might have been some PWSs affected by the power cuts, however they are all resolved at this time. Please let me know if there's anything else you need.

*Nichole

-----Original Message-----

From: Welsh, Michele [mailto:Michele.Welsh@deq.ok.gov]
Sent: Friday, January 15, 2016 7:07 AM
To: Foster, Nichole; Hildebrand, Mark
Subject: FW: Emergency Reponse to Winter Storms 2015 - 2016

Nichole,

This seems to be the most current email I have.

Michele

From: Coffey, Kay
Sent: Tuesday, January 12, 2016 5:07 PM
To: Welsh, Michele; Alig, Jennifer L.
Subject: FW: Emergency Reponse to Winter Storms 2015 - 2016

Michele and Jennifer,

Please let me know if you see any changes needed.

Thank you,
Kay

From: Coffey, Kay
Sent: Tuesday, January 12, 2016 9:05 AM
To: Chard-McClary, Shellie; Thompson, Patty
Subject: Emergency Reponse to Winter Storms 2015 - 2016

Shellie and Patty,

Based on info provided by ECLS and WQD related to the recent power outages/flooding/loss of operator, we have prepared the revised attached report on systems that were reported to be in a state of emergency which could possibly have resulted in a failure of the system to achieve compliance with the SDWA. (We have not included systems that were reported as having activated generators promptly so that they could continue with normal operations.)

We are still receiving daily updates on four systems for which their information is indicated in red. They are Hulbert (Lake Fort Gibson), Lakewood - LRED (Lake Tenkiller), Pettit Mountain (Lake Tenkiller), and Pittsburg RWD #14 (Lake Eufaula). The first three have problems as a result of flooding, and the third has had problems that are a combination of flooding and operational issues.

The far right column is intended to guide DEQ in providing follow-up assistance to help systems increase their resiliency to future weather events.

Please advise of any additional info you might want to see.

Thank you,
Kay

Dorsey, Nancy

From: Dorsey, Nancy
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To: Hildebrandt, Kurt
Subject: FW: Emergency Reponse to Winter Storms 2015 - 2016
Attachments: Emergency Response 12_15 1_16.xlsx

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To: Dorsey, Nancy
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From: Dorsey, Nancy
Sent: Thursday, January 14, 2016 5:10 PM
To: R6 6WQ-SG
Cc: Bates, William; Hildebrandt, Kurt; Lawrence, Rob; Ray and Sue Leissner
(b) (6); Mike Bechdol (b) (6) Gillespie, David
Subject: FW: news update for Thurs 01-14-15 (includes previous)

Check this one out, it is so bad its good. Requires sound or maybe earplugs?

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**** State Orders More Injection Well Reductions in Northwest Oklahoma (OK Energy Today)**
<http://okenergytoday.com/2016/01/state-orders-more-injection-well-reductions-in-northwest-oklahoma/>

**** Oklahoma Corporation Commission limits 27 disposal wells following Fairview earthquakes (NewsOK)** <http://newsok.com/corporation-commission-limits-27-wells-following-quakes/article/5472309>

****Experts answer questions at earthquake summit (KOCO)** <http://www.koco.com/news/experts-answer-citizens-questions-at-koco-earthquake-summit/37426698>

Oklahoma Corporation Commission chairman pushes for reopening old Southwestern Bell case (NewsOK) <http://newsok.com/oklahoma-corporation-commission-chairman-pushes-for-reopening-old-southwestern-bell-case/article/5472365>

****Oklahoma assistant AG, Owasso resident criticize PSO's smart meter opt-out plan (NewsOK)**
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**** Is bribery “repugnant” to the Oklahoma constitution? (KFOR)** <http://kfor.com/2016/01/14/is-bribery-repugnant-to-the-oklahoma-constitution/>

****Corporation Commission directs changes at 27 disposal wells near Fairview (Journal Record)**
<http://journalrecord.com/2016/01/13/corporation-commission-directs-changes-at-27-disposal-wells-near-fairview-energy/>

****Data deluge: Corporation Commission says it’s drowning in disposal well data (Journal Record)** <http://journalrecord.com/2016/01/12/data-deluge-corporation-commission-says-its-drowning-in-disposal-well-data-energ/>

****Broader view: Southside OKC lawmaker makes noise about earthquakes (Journal Record)**
<http://journalrecord.com/2016/01/12/broader-view-southside-okc-lawmaker-makes-noise-about-earthquakes-capitol/>

**** Scientists: Cutting wastewater disposal to 2012 level might end quakes (Journal Record)**
<http://journalrecord.com/2016/01/08/scientists-cutting-disposal-to-2012-level-might-end-quakes-energy/>

EARTHQUAKES

Logan County residents sue drillers over earthquake damage (Journal Record)
<http://journalrecord.com/2016/01/13/logan-county-residents-sue-drillers-over-earthquake-damage-energy/>

New Oklahoma Earthquake parody (KFOR) <http://kfor.com/2016/01/13/group-creates-funny-parody-about-oklahoma-earthquakes-to-taylor-swift-song/>

OIL AND GAS INDUSTRY

SandRidge cuts 226 jobs at oilfield services company (NewsOK) <http://newsok.com/sandridge-cuts-226-jobs-at-oilfield-services-company/article/5472304>

Firefighters extinguish damaging Grady Co. fracking fire (KFOR)
<http://kfor.com/2016/01/13/all-lanes-of-traffic-shut-down-due-to-large-oil-rig-fire/>

Continental Resources CEO sees oil rising to \$60 by year end (AP)
<http://www.kansascity.com/news/business/national-international/article54541545.html>

Oklahoma's energy industry continues to suffer, according to Fed survey (NewsOK)
<http://newsok.com/oklahomas-energy-industry-continues-to-suffer-according-to-fed-survey/article/5471501>

Regulators to give written reason for cutting oilfield fines (AP)
<http://www.sunherald.com/news/business/article54107970.html>

Experts to study food safety of oilfield wastewater (AP)
<http://www.montereyherald.com/article/zz/20160112/NEWS/160118858>

LEGISLATURE

Lawmakers' bills include fines for students who misbehave, electromagnetic pulse attacks (Tulsa World) <http://www.tulsaworld.com/news/capitolreport/lawmakers-bills-include-fines->

[for-students-who-misbehave-electromagnetic-pulse/article_f943d672-04cf-5c42-a07d-880cdf945a16.html](http://www.washingtonpost.com/archive/local/2016/01/12/for-students-who-misbehave-electromagnetic-pulse/article_f943d672-04cf-5c42-a07d-880cdf945a16.html)

ALTERNATIVE ENERGY

Ruling is another setback to proposed Iowa wind energy line (AP)

<http://www.washingtontimes.com/news/2016/jan/12/ruling-is-another-setback-to-proposed-iowa-wind-en/>

ELECTRIC GENERATION/TRANSMISSION

Hunt's Proposed Utility Takeover Rattles Texas Regulators (WSJ)

<http://www.wsj.com/articles/hunts-proposed-utility-takeover-rattles-texas-regulators-1452721022>

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Thursday, January 14, 2016 8:13 AM
To: Bates, William
Subject: RE: Agency plans 'larger approach' to western Okla. shaking

Yeah, I sent you OCC's announcement yesterday...I think.

From: Bates, William
Sent: Thursday, January 14, 2016 7:19 AM
To: Kobelski, Bruce; Dorsey, Nancy; Johnson, Ken-E; Lawrence, Rob; Dellinger, Philip; Hildebrandt, Kurt; Lawrence, Rob; Graves, Brian
Subject: Agency plans 'larger approach' to western Okla. shaking

EARTHQUAKES:

Agency plans 'larger approach' to western Okla. shaking

[Mike Soraghan](#), E&E reporter

Published: Thursday, January 14, 2016

Oil and gas regulators directed more than two dozen disposal wells in western Oklahoma to curtail operations yesterday but say they are planning a "larger approach" in response to a series of larger-than-normal quakes in the area.

"The data available indicates that a much larger approach to the earthquakes in that entire part of northwestern Oklahoma is needed, and we have been working on such a plan," said Tim Baker, director of the Oklahoma Corporation Commission's Oil and Gas Division. "However, given the recent earthquake activity in the Fairview area, the plan announced today is a necessary step as part of this ongoing process."

Baker said the agency is telling well operators to resume operations gradually after power outages. Officials are concerned that there is a higher potential for earthquakes when power outages cause lots of disposal wells in an area to stop, then start again at the same time.

Under the initial plan for western Oklahoma, 27 disposal wells injecting into the Arbuckle formation in the Fairview area are to reduce disposal volumes. The total disposal volume reduction for the area in question is about 18 percent.

The area around Fairview was hit last week with some of the strongest quakes in years in the state, including magnitude 4.3 and 4.8 events only seconds apart ([EnergyWire](#), Jan. 8).

Scientists and state officials have tied a massive increase in the number of earthquakes in the state to wastewater disposal wells from oil and gas production. Researchers say favorably aligned faults have combined with production methods that result in unusually large volumes of wastewater creating the earthquake swarms.

William J. L. Bates

Geologist

U.S. EPA

Office of Ground Water & Drinking Water: Prevention Branch

202-564-6165

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Wednesday, January 13, 2016 5:27 PM
To: Dellinger, Philip
Subject: Arcadia dam assessment
Attachments: SP2013-01_PSHA-Arcadia.pdf

Importance: High

I suggest they get Todd Hallihan to translate the point into understandable English!

OGS PUBLICATION: Probabilistic Seismic Hazard Assessment and Observed Ground Motions for the Arcadia, Oklahoma, Dam Site; AUSTIN A. HOLLAND, CHRISTOPHER R. TOTH, AND EMMA M. BAKER

The purpose of this study is two fold: 1) to determine the site amplification of ADOK, and 2) to estimate the largest earthquake-induced ground motions experienced at this site.

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Wednesday, January 13, 2016 1:55 PM
To: Foster, Nichole
Subject: RE: any PWS in Oklahoma affected by power cuts?

Sorry, I wasn't clear.

This was from December 27th through 29th. The question came up because a number of disposal wells were shut-down by the power outages.

From: Foster, Nichole
Sent: Wednesday, January 13, 2016 1:54 PM
To: Dorsey, Nancy
Subject: RE: any PWS in Oklahoma affected by power cuts?

I have not heard anything. What's going on with the power?? Would you like me to reach out to my ODEQ folks for an answer?

*N

From: Dorsey, Nancy
Sent: Wednesday, January 13, 2016 1:52 PM
To: Foster, Nichole
Subject: any PWS in Oklahoma affected by power cuts?

Hi Nichole,

Do you know the answer to this one?

Thanks,
Nancy

From: Hildebrandt, Kurt
Sent: Wednesday, January 13, 2016 1:19 PM
To: Dorsey, Nancy
Subject: RE: OCC Fairview EQ advisory - final version

Nancy –

This is probably outside of your information gathering but I was asked by my management if R6 knew of any public water supplies that got taken off-line during the power outage?

Thanks,
Kurt

From: Dorsey, Nancy
Sent: Wednesday, January 13, 2016 12:33 PM
To: R6 6WQ-SG <R6_6WQSG@epa.gov>; Brown, Jamesr <brown.jamesr@epa.gov>; Hildebrandt, Kurt <Hildebrandt.Kurt@epa.gov>; Bates, William <bates.william@epa.gov>; Kobelski, Bruce <Kobelski.Bruce@epa.gov>

Cc: Gillespie, David <Gillespie.David@epa.gov>; Lawrence, Rob <Lawrence.Rob@epa.gov>

Subject: FW: OCC Fairview EQ advisory - final version

From: Matt Skinner [<mailto:M.Skinner@occemail.com>]

Sent: Wednesday, January 13, 2016 12:05 PM

To: Dorsey, Nancy

Subject: FW: advisory

From: Matt Skinner

Sent: Wednesday, January 13, 2016 12:05 PM

To: 'Jason.Murphey@okhouse.gov'; 'Cory T. Williams'; 'Cory T. Williams'

Subject: advisory

attached

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Wednesday, January 13, 2016 1:46 PM
To: Charles Lord; Jim Marlatt
Cc: Patricia Downey
Subject: my running OCC action spreadsheet
Attachments: qry_AC_Orders9_well_ARB_Actions.xlsx

FYI

Nancy S. Dorsey
Environmental Scientist
Oklahoma Class II Program Manager
WQ-SG EPA Region 6
1445 Ross Ave. #1200
Dallas, TX 75202-2733
214-665-2294
FAX 214-665-2191

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Wednesday, January 13, 2016 11:04 AM
To: Kobelski, Bruce
Cc: Bates, William; Hildebrandt, Kurt
Subject: RE: earthquake causes power outage which causes more earthquakes

Fairview, Oklahoma	Avg km	>=2.5	>=3	>=3.5	>=4	>=4.5
1/1/2016		0	0	0	0	0
1/2/2016	27.3	3	0	0	0	0
1/3/2016		0	0	0	0	0
1/4/2016		0	0	0	0	0
1/5/2016		0	0	0	0	0
1/6/2016	29.0	2	2	2	0	0
1/7/2016	30.0	24	15	8	4	1
1/8/2016	29.5	6	1	1	1	0
1/9/2016		0	0	0	0	0
1/10/2016		0	0	0	0	0
1/11/2016	29.7	6	3	1	0	0
1/12/2016		0	0	0	0	0
		41	21	12	5	1

From: Kobelski, Bruce
Sent: Wednesday, January 13, 2016 10:47 AM
To: Dorsey, Nancy
Subject: RE: earthquake causes power outage which causes more earthquakes

Nancy- Didn't I see about 6 quakes in Fairview on Monday- all about 2.5 to 3.2? That is a hot spot.

From: Dorsey, Nancy
Sent: Wednesday, January 13, 2016 11:41 AM
To: Bates, William <bates.william@epa.gov>; Hildebrandt, Kurt <Hildebrandt.Kurt@epa.gov>
Cc: Kobelski, Bruce <Kobelski.Bruce@epa.gov>; Dellinger, Philip <dellinger.philip@epa.gov>; Johnson, Ken-E <Johnson.Ken-E@epa.gov>
Subject: RE: earthquake causes power outage which causes more earthquakes
Importance: High

After Kurt's question, I got to thinking about the timing. I have e-mailed OCC for clarification, but in the meantime did a little surfing.

Power outages

Dec 27

Dec. 28 ~10AM 57000 customers; systems: OGE, PSO, Cimarron Electric, Cotton Electric started...?

Dec. 29

Dec 30

Wells shut-in 12/27-29 5:39:19 AM

EQ M4+

12/29/15 M4.1 Edmond 5:39:10 AM

1/1/16 M4.4 OKC 5:39:40 AM

1/6/16 M4.3 Fairview 10:27 PM

1/7/16 M4.8 Alva 10:28 PM

1/7/16 M4.0 Fairview 2:37 AM

1/7/16 M4.0 Fairview 2 PM

1/8/16 M4.1 Fairview 7:36 AM

From: Bates, William

Sent: Wednesday, January 13, 2016 10:23 AM

To: Dorsey, Nancy; Hildebrandt, Kurt

Cc: Kobelski, Bruce

Subject: RE: earthquake causes power outage which causes more earthquakes

Ah, thanks!

William J. L. Bates

Geologist

U.S. EPA

Office of Ground Water & Drinking Water: Prevention Branch

202-564-6165

From: Dorsey, Nancy

Sent: Wednesday, January 13, 2016 11:17 AM

To: Bates, William <bates.william@epa.gov>; Hildebrandt, Kurt <Hildebrandt.Kurt@epa.gov>

Cc: Kobelski, Bruce <Kobelski.Bruce@epa.gov>

Subject: RE: earthquake causes power outage which causes more earthquakes

Actually, it was variable. Many of the wells did come back up slowly...the issue here is more volume than pressure. Most are on vacuum.

From: Bates, William

Sent: Wednesday, January 13, 2016 10:16 AM

To: Hildebrandt, Kurt; Dorsey, Nancy

Cc: Kobelski, Bruce

Subject: RE: earthquake causes power outage which causes more earthquakes

This is really interesting and scary. So, I guess this means that there were no backup generators on site.

From the article I get the impression that when the wells came back on line there was not much ramping up to pressures pre-outage. Just straight to pre-outage pressures.

William J. L. Bates

Geologist
U.S. EPA
Office of Ground Water & Drinking Water: Prevention Branch
202-564-6165

From: Hildebrandt, Kurt
Sent: Wednesday, January 13, 2016 10:26 AM
To: Dorsey, Nancy <Dorsey.Nancy@epa.gov>
Cc: Bates, William <bates.william@epa.gov>; Kobelski, Bruce <Kobelski.Bruce@epa.gov>
Subject: RE: earthquake causes power outage which causes more earthquakes

OK, it wasn't clear to me if it was just the storm or the storm followed by the earthquake which lead up to the power outage. Thanks!

From: Dorsey, Nancy
Sent: Wednesday, January 13, 2016 9:25 AM
To: Hildebrandt, Kurt <Hildebrandt.Kurt@epa.gov>
Cc: Bates, William <bates.william@epa.gov>; Kobelski, Bruce <Kobelski.Bruce@epa.gov>
Subject: RE: earthquake causes power outage which causes more earthquakes

WRONG! It was the combination of ice on the lines and the initial M4.3 or 4.5 earthquake at Edmond.

From: Hildebrandt, Kurt
Sent: Wednesday, January 13, 2016 9:24 AM
To: Dorsey, Nancy
Cc: Bates, William; Kobelski, Bruce
Subject: RE: earthquake causes power outage which causes more earthquakes

For those playing along at home, it was storms taking out the power and then a system reset not an earthquake taking out the power.

From: Dorsey, Nancy
Sent: Wednesday, January 13, 2016 9:22 AM
To: Hildebrandt, Kurt <Hildebrandt.Kurt@epa.gov>
Cc: Bates, William <bates.william@epa.gov>; Kobelski, Bruce <Kobelski.Bruce@epa.gov>
Subject: RE: earthquake causes power outage which causes more earthquakes

Yeah, like how much more proof of a connection does one need? Not to mention circular actions. Yikes!

From: Hildebrandt, Kurt
Sent: Wednesday, January 13, 2016 9:20 AM
To: Dorsey, Nancy
Cc: Bates, William; Kobelski, Bruce
Subject: RE: earthquake causes power outage which causes more earthquakes

That's pretty scary when you think about it.

From: Dorsey, Nancy
Sent: Wednesday, January 13, 2016 9:16 AM
To: R6 6WQ-SG <R6_6WQSG@epa.gov>; Brown, Jamesr <brown.jamesr@epa.gov>; Gillespie, David <Gillespie.David@epa.gov>; Lawrence, Rob <Lawrence.Rob@epa.gov>; Hildebrandt, Kurt <Hildebrandt.Kurt@epa.gov>; Bates, William <bates.william@epa.gov>

Subject: earthquake causes power outage which causes more earthquakes

Importance: High

MORE APPARENT EARTHQUAKES AND POWER OUTAGE LINKS: On January 12th, the Oklahoma Corporation Commission (OCC) released following, “The seismic events that occurred during the week of January 4th, 2016, in the Fairview area appear to have a very close correlation to the storms that created power outages in such area. It is believed that the power outage may have created a situation where a number of producing wells were shut in, then simultaneously came back on line. When the wells began producing again, this apparently resulted in a tremendous volume of produced water being disposed into the Arbuckle formation at the same time. The Commission’s Oil and Gas Conservation Division (OGCD) recommends that in the future when a power outage of this magnitude occurs, the production volumes be staged or phased in over a period of time.” “OGCD is formulating a plan encompassing a larger portion of the area of interest in the northwestern part of the State than is addressed in this letter, and the plan should be finalized within the next few weeks.” **Nancy Dorsey, 214-665-2294**

Nancy S. Dorsey
Environmental Scientist
Oklahoma Class II Program Manager
WQ-SG EPA Region 6
1445 Ross Ave. #1200
Dallas, TX 75202-2733
214-665-2294
FAX 214-665-2191

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Wednesday, January 13, 2016 9:26 AM
To: Gillespie, David
Subject: RE: Guthrie / Earthquake

Can the civil courts shut-down operations?

From: Gillespie, David
Sent: Wednesday, January 13, 2016 8:53 AM
To: Graves, Brian; Lawrence, Rob; Bates, William; Kobelski, Bruce; Hildebrandt, Kurt; Dorsey, Nancy; Dellinger, Philip
Subject: RE: Guthrie / Earthquake

(b) (5)

so to speak,

a bit.

If you or anyone would like to discuss this, please let me know.

David

David Gillespie
Office of Regional Counsel
U.S. EPA, Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733
Voice: (214) 665-7467
Facsimile: (214) 665-2182
gillespie.david@epa.gov

From: Graves, Brian
Sent: Tuesday, January 12, 2016 5:40 PM
To: Lawrence, Rob; Gillespie, David; Bates, William; Kobelski, Bruce; Hildebrandt, Kurt
Subject: FW: Guthrie / Earthquake

From: Dellinger, Philip
Sent: Tuesday, January 12, 2016 3:06 PM
To: R6 6WQ-SG <R6_6WQSG@epa.gov>
Subject: FW: Guthrie / Earthquake

Very interesting new case.

From: Robert Jackman [<mailto:robertjackman@sbcglobal.net>]
Sent: Tuesday, January 12, 2016 2:46 PM
To: Martha A Spotts; Dellinger, Philip; sickber@okstate.edu
Subject: FW: Guthrie / Earthquake

Attached ---Scott Poynter, Atty et.al. filing requesting Class Action lawsuit status today in Logan County OK

From: Scott Poynter [<mailto:scott@poynterlawgroup.com>]
Sent: Tuesday, January 12, 2016 1:17 PM
To: Mike Ray
Subject: Fwd: Guthrie / Earthquake

You might want to let people know we are covering all of OK and the continuing quakes.

Scott Poynter
Poynter Law Group
Of Counsel to Steel, Wright, & Collier PLLC
www.poynterlawgroup.com
Sent from my iPhone

Begin forwarded message:

From: "William B. Federman (WBF)" <WBF@federmanlaw.com>
Date: January 12, 2016 at 12:10:13 PM CST
To: Scott Poynter <scott@poynterlawgroup.com>
Subject: FW: Guthrie / Earthquake

FYI

William B. Federman
Federman & Sherwood
10205 N. Pennsylvania Ave.
Oklahoma City, Oklahoma 73120
(405) 235-1560 (work)
(405) 239-2112 (facsimile)
and
2926 Maple Ave.
Suite 200
Dallas, Texas 75201

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Version: 2016.0.7294 / Virus Database: 4489/11382 - Release Date: 01/12/16

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Wednesday, January 13, 2016 9:23 AM
To: Lawrence, Rob
Subject: RE: earthquake causes power outage which causes more earthquakes

You got it!

From: Lawrence, Rob
Sent: Wednesday, January 13, 2016 9:22 AM
To: Dorsey, Nancy
Subject: RE: earthquake causes power outage which causes more earthquakes

So we need to break the vicious cycle?

Rob Lawrence
Region 6
Policy Advisor - Energy Issues
214.665.6580

From: Dorsey, Nancy
Sent: Wednesday, January 13, 2016 9:16 AM
To: R6 6WQ-SG; Brown, Jamesr; Gillespie, David; Lawrence, Rob; Hildebrandt, Kurt; Bates, William
Subject: earthquake causes power outage which causes more earthquakes
Importance: High

MORE APPARENT EARTHQUAKES AND POWER OUTAGE LINKS: On January 12th, the Oklahoma Corporation Commission (OCC) released following, “The seismic events that occurred during the week of January 4th, 2016, in the Fairview area appear to have a very close correlation to the storms that created power outages in such area. It is believed that the power outage may have created a situation where a number of producing wells were shut in, then simultaneously came back on line. When the wells began producing again, this apparently resulted in a tremendous volume of produced water being disposed into the Arbuckle formation at the same time. The Commission’s Oil and Gas Conservation Division (OGCD) recommends that in the future when a power outage of this magnitude occurs, the production volumes be staged or phased in over a period of time.” “OGCD is formulating a plan encompassing a larger portion of the area of interest in the northwestern part of the State than is addressed in this letter, and the plan should be finalized within the next few weeks.” **Nancy Dorsey, 214-665-2294**

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Oklahoma Class II Program Manager
WQ-SG EPA Region 6
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Dallas, TX 75202-2733
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Dorsey, Nancy

From: Dorsey, Nancy
Sent: Wednesday, January 13, 2016 9:22 AM
To: Hildebrandt, Kurt
Cc: Bates, William; Kobelski, Bruce
Subject: RE: earthquake causes power outage which causes more earthquakes

Yeah, like how much more proof of a connection does one need? Not to mention circular actions. Yikes!

From: Hildebrandt, Kurt
Sent: Wednesday, January 13, 2016 9:20 AM
To: Dorsey, Nancy
Cc: Bates, William; Kobelski, Bruce
Subject: RE: earthquake causes power outage which causes more earthquakes

That's pretty scary when you think about it.

From: Dorsey, Nancy
Sent: Wednesday, January 13, 2016 9:16 AM
To: R6 6WQ-SG <R6_6WQSG@epa.gov>; Brown, Jamesr <brown.jamesr@epa.gov>; Gillespie, David <Gillespie.David@epa.gov>; Lawrence, Rob <Lawrence.Rob@epa.gov>; Hildebrandt, Kurt <Hildebrandt.Kurt@epa.gov>; Bates, William <bates.william@epa.gov>
Subject: earthquake causes power outage which causes more earthquakes
Importance: High

MORE APPARENT EARTHQUAKES AND POWER OUTAGE LINKS: On January 12th, the Oklahoma Corporation Commission (OCC) released following, "The seismic events that occurred during the week of January 4th, 2016, in the Fairview area appear to have a very close correlation to the storms that created power outages in such area. It is believed that the power outage may have created a situation where a number of producing wells were shut in, then simultaneously came back on line. When the wells began producing again, this apparently resulted in a tremendous volume of produced water being disposed into the Arbuckle formation at the same time. The Commission's Oil and Gas Conservation Division (OGCD) recommends that in the future when a power outage of this magnitude occurs, the production volumes be staged or phased in over a period of time." "OGCD is formulating a plan encompassing a larger portion of the area of interest in the northwestern part of the State than is addressed in this letter, and the plan should be finalized within the next few weeks." **Nancy Dorsey, 214-665-2294**

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WQ-SG EPA Region 6
1445 Ross Ave. #1200
Dallas, TX 75202-2733
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FAX 214-665-2191

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Monday, January 11, 2016 9:31 AM
To: Johnson, Ken-E
Subject: FW: Oklahoma Observer Jan. 9th 2016 issue / Earthquake Piece by Bob Jackman

Not exactly a scientific report.

From: Dellinger, Philip
Sent: Monday, January 11, 2016 9:23 AM
To: Dorsey, Nancy; Lawrence, Rob; Honker, William; Garcia, David; Brown, Jamesr
Subject: FW: Oklahoma Observer Jan. 9th 2016 issue / Earthquake Piece by Bob Jackman

Bob Jackman is a former oil and gas geologist, and has been prominent in the ongoing Ok. seis issue. Of note, state congressman holding all day public meeting this Friday.

From: Robert Jackman [[\(b\) \(6\)](mailto:(b) (6))]
Sent: Saturday, January 09, 2016 1:48 PM
To: Martha A Spotts; Alana Newton; 'Ann Patton'; Barbara VanHanken; Brian Renegar; (b) (6); bsands@oeta.tv; Cory Williams; William Cunningham; 'Charlette Hearne'; Dellinger, Philip; (b) (6); eredea@peoplepc.com; Diane Hall; David.Perryman@okhouse.gov; jboak@ou.edu; 'joe wertz'; 'Judy Wyatt'; kyle murray; kfordesk@kfor.com; kfornews@yahoo.com; msoraghan@eenews.net; mcnamara@usgs.gov; nesa.azimi@aljazeera.net; S Frusher; r-richards@cox.net; richardmorrissette@okhouse.gov; randy.krehbiel@tulsaworld.com; Russell Doughty; (b) (6); Barbara VanHanken; sickber@okstate.edu; 'Scott Poynter'; Ty Jackman; Terry Young; Cory Williams; Ziva
Subject: FW: Oklahoma Observer Jan. 9th 2016 issue / Earthquake Piece by Bob Jackman

Subject: Oklahoma Observer Jan. 9th 2016 issue / scroll down to page 6. More earthquake coverage by Bob Jackman
<http://okobserver.net/wp-content/uploads/2015/09/Jan16Digital.pdf>

No virus found in this message.

Checked by AVG - www.avg.com

Version: 2016.0.7294 / Virus Database: 4489/11362 - Release Date: 01/09/16

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Friday, January 08, 2016 12:18 PM
To: Charles Lord; Jim Marlatt; Laura Erichsen
Subject: Interim order BHP runs?

Are the BHP survey reports still under the gismaps drive?

Do you know if Sandridge really had a number of wells shut-in in late December, or where they running surveys?

Thanks,
Nancy

PS Enforcement received a citizen's complaint re Sandridge non-compliance. I have not seen it.

Nancy S. Dorsey
Environmental Scientist
Oklahoma Class II Program Manager
WQ-SG EPA Region 6
1445 Ross Ave. #1200
Dallas, TX 75202-2733
214-665-2294
FAX 214-665-2191

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Friday, January 08, 2016 7:57 AM
To: R6 6WQ-SG
Cc: Gillespie, David; Hildebrandt, Kurt; Bates, William
Subject: FW: 2016-01-08 13:36:29 (M4.1) OKLAHOMA 36.5 -98.7 (63093) - Fairview AGAIN

AGAIN!

From: USGS ENS [mailto:ens@ens.usgs.gov]
Sent: Friday, January 08, 2016 7:53 AM
To: Dorsey, Nancy
Subject: 2016-01-08 13:36:29 (M4.1) OKLAHOMA 36.5 -98.7 (63093)

M4.1 - OKLAHOMA



Preliminary Earthquake Report

Magnitude	4.1
Date-Time	8 Jan 2016 13:36:29 UTC 8 Jan 2016 07:36:29 near epicenter 8 Jan 2016 06:36:29 standard time in your timezone
Location	36.500N 98.671W
Depth	3 km
Distances	30 km (18 mi) NNW of Fairview, Oklahoma 64 km (39 mi) E of Woodward, Oklahoma 71 km (44 mi) W of Enid, Oklahoma 108 km (66 mi) N of Weatherford, Oklahoma 154 km (95 mi) NW of Oklahoma City, Oklahoma
Location Uncertainty	Horizontal: 2.8 km; Vertical 7.3 km
Parameters	Nph = 130; Dmin = 23.4 km; Rmss = 0.71 seconds; Gp = 23° Version =
Event ID	us 10004cck

For updates, maps, and technical information, see: [Event Page](#) or [USGS Earthquake Hazards Program](#)

[Disclaimer](#)

This email was sent to dorsey.nancy@epa.gov

You requested mail for events within the 'R6 plus CO' region for M1.0 between 08:00 and 20:00 and M1.5 other times.

To change your parameters, go to:

<https://sslearnquake.usgs.gov/ens>

To unsubscribe, send a one-line reply to this message with:

STOP dorsey.nancy@epa.gov

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Friday, January 08, 2016 7:55 AM
To: Moore, Jessica
Subject: FW: NYSE delists SandRidge stock after price hits 15 cents a share

[Related event](#)

From: Graves, Brian
Sent: Thursday, January 07, 2016 3:02 PM
To: R6 6WQ-SG; Bates, William; Hildebrandt, Kurt; Kobelski, Bruce; Lawrence, Rob; Brown, Jamesr
Subject: NYSE delists SandRidge stock after price hits 15 cents a share

NYSE delists SandRidge stock after price hits 15 cents a share

by [Adam Wilmoth](#) Published: January 6, 2016 *Updated: 18 hours ago* **THE OKLAHOMAN**



The New York Stock Exchange on Wednesday removed SandRidge Energy Inc. from trading, citing "abnormally low" stock prices.

Shares of the Oklahoma City-based oil and natural gas company dropped 2 cents, or nearly 12 percent, to an all-time low of 15 cents a share Wednesday before the notice was issued.

"NYSE Regulation has now determined that the company is no longer suitable for listing based on 'abnormally low' price levels," the exchange said.

The exchange suspended trading of SandRidge stock after market close Wednesday and said it would apply to the Securities and Exchange Commission to formally delist the company.

SandRidge can appeal the decision to a committee of the exchange's directors. The company said it expects to trade on the over-the-counter market beginning Thursday. A new ticker symbol has not been disclosed.

"The prolonged depression of commodity prices have caused nearly all companies in our industry to suffer material degradation in value," SandRidge said in a statement Wednesday.

"While the delisting of our stock from the NYSE is certainly not an outcome we desired, it's important to note that this action does not affect our day-to-day operations. SandRidge continues to have ample liquidity, and we remain focused on navigating the current commodity downturn and extending our capabilities, including developing our recently acquired Niobrara assets."

Moving to the over-the-counter bulletin board limits the number of investors who can buy the stock. Most mutual fund and investment money managers only invest in stocks traded on major exchanges.

The New York Stock Exchange in July warned SandRidge that its stock would be delisted if the share price remained less than \$1 a share. The company scheduled a special shareholders meeting for Nov. 6 to vote on a reverse stock split that would increase the share price. SandRidge later canceled the meeting and said it would address the reverse split at its regular annual meeting in May.

SandRidge shares have tumbled 94 percent over the past year in concert with falling oil and natural gas prices as the company also dealt with a heavy debt burden. The stock is down from an all-time high of \$68 in 2008.

Oil and natural gas prices tumbled again Wednesday, dragged down by rising oil and gasoline inventories and reports of slowing economic growth in Asia. Domestic benchmark West Texas Intermediate crude shed \$2, or 5.6 percent,

Wednesday to \$33.97 a barrel, its lowest price in more than seven years. The oil price is down 69 percent from a recent high of almost \$108 in June 2014.

Natural gas gave back 5.6 cents, or 2.5 percent, Wednesday to close at \$2.267 per 1,000 cubic feet.

Besides tumbling commodity and stock prices, SandRidge also has been beleaguered by earthquakes and increasing regulation to stem the seismic swarm that has hit the state over the past four years. Researchers and regulators have attributed the rise in earthquake activity to high-volume wastewater disposal into and through the Arbuckle formation, the deepest layer of sedimentary rock throughout much of Oklahoma.

SandRidge is the largest producer in the water-rich Mississippi Lime formation in northwestern Oklahoma and accounted for about one-third of all the produced saltwater disposed into Arbuckle zones in 2014, according to an analysis of volume data from the Oklahoma Corporation Commission.

Commission officials are preparing an administrative case against SandRidge after the company last month defied a voluntary directive to reduce volumes at six disposal wells in Alfalfa County.

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Thursday, January 07, 2016 11:19 AM
To: Bates, William; Graves, Brian
Subject: RE: shaking in the OK

No, Sandridge does not have wells in that immediate area. Their Arbuckle disposal wells are primarily in the Oklahoma counties just below the Kansas border: northern Garfield, Grant; Alfalfa; Woods and eastern Harper.

Plus a few in southern Garfield, eastern Kingfisher and Logan.

From: Bates, William
Sent: Thursday, January 07, 2016 8:30 AM
To: Graves, Brian; Dorsey, Nancy
Subject: RE: shaking in the OK

Nancy's back? Welcome! I hope you enjoyed your time off. ☺

William J. L. Bates
Geologist
U.S. EPA
Office of Ground Water & Drinking Water: Prevention Branch
202-564-6165

From: Graves, Brian
Sent: Thursday, January 07, 2016 9:29 AM
To: Dorsey, Nancy <Dorsey.Nancy@epa.gov>
Cc: Bates, William <bates.william@epa.gov>
Subject: FW: shaking in the OK

Nancy do you know the answer to this?

From: Bates, William
Sent: Thursday, January 07, 2016 6:08 AM
To: Graves, Brian <Graves.Brian@epa.gov>
Subject: shaking in the OK

Good morning Brian,

It seems that last night and this morning has brought a lot of activity to OK. A lot of it seems to be around Fairview and Alva. Do you if that is where Sandridge is doing lot of their activity? This question is more out of curiosity, since Sandridge is the only company that I am aware of that has pushed back on OCC.

William J. L. Bates
Geologist
U.S. EPA
Office of Ground Water & Drinking Water: Prevention Branch
202-564-6165

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Tuesday, December 22, 2015 12:36 PM
To: Dellinger, Philip; Brown, Jamesr
Cc: Bates, William; Hildebrandt, Kurt; Johnson, Ken-E
Subject: FW: news update for Tues 12-21-15

Scroll down to the Sandridge cases and on to the Seismicity section!

From: Matt Skinner [mailto:M.Skinner@occcemail.com]
Sent: Tuesday, December 22, 2015 10:16 AM
To: Matt Skinner
Subject: news update for Tues 12-21-15

Good morning.

Quote for the day: "The single biggest problem in communication is the illusion that it has taken place." (George Bernard Shaw)

**** SandRidge defies Okla. directive to close 6 wells (Energywire)**

<http://www.eenews.net/energywire/2015/12/21/stories/1060029814>

**** SandRidge Energy balks at earthquake-related shutdown directive (Tulsa World)**

http://www.tulsaworld.com/news/government/sandridge-energy-balks-at-earthquake-related-shutdown-directive/article_41e5d28d-4102-5656-a65b-d76cc21d3721.html

**** SandRidge refuses to shut down disposal wells after quakes (NewsOK)**

<http://newsok.com/sandridge-refuses-to-shut-down-disposal-wells-after-quakes/article/5468098>

**** OK Corporation Commission To Take On SandRidge Energy (KWTU)**

<http://www.news9.com/story/30804157/ok-corporation-commission-to-take-on-sandridge-energy>

**** Oklahoma vs. Sandridge Energy: State plans legal action after company refused to shut down 6 wells (KFOR)** <http://kfor.com/2015/12/21/oklahoma-vs-sandridge-energy-state-plans-legal-action-after-company-refused-to-shut-down-6-wells/>

**** Commission preparing disposal well case against Sandridge (KOCO)**

<http://www.koco.com/news/Commission-preparing-disposal-well-case-against-Sandridge/37074212>

**** Oklahoma Corporation Commission preparing court action against SandRidge Energy (Fox 25)**

<http://okcfox.com/news/local/corporation-commission-preparing-court-action-against-sandridge-energy>

****OG&E rate case could reduce some customers' bills (Journal Record)**

<http://journalrecord.com/2015/12/18/oge-rate-case-could-reduce-some-customers-bills-energy/>

****OG&E files \$92.5 million rate case to be offset by lower fuel costs (NewsOK)**

<http://newsok.com/oge-files-92.5-million-rate-case-to-be-offset-by-lower-fuel-costs/article/5467622>

ALTERNATIVE GENERATION

Critics concerned about some wind farms planned for Texas (AP) <http://www.star-telegram.com/news/state/texas/article49835345.html>

Group effort: Co-op allows residents to buy panels in solar array (Journal Record) <http://journalrecord.com/2015/12/18/group-effort-co-op-allows-residents-to-buy-panels-in-solar-array-energy/>

OF INTEREST

Unexpected claims for energy tax rebates hurt state collections (Journal Record) <http://journalrecord.com/2015/12/18/unexpected-claims-of-energy-tax-rebates-hurt-state-collections-capitol/>

Gas Windfall Fails to Stoke Consumers (Wall Street Journal) <http://www.wsj.com/articles/gas-windfall-fails-to-stoke-consumers-1450637317>

SEISMICITY

Judge refuses to toss lawsuit over earthquake damage (Tulsa World) http://www.tulsaworld.com/news/state/judge-refuses-to-toss-lawsuit-over-earthquake-damage/article_e1256c5b-d92a-5ecf-94ee-8544a0be0627.html

Adding up: State officials wonder if damage from small quakes weakens buildings (Journal Record) <http://journalrecord.com/2015/12/18/adding-up-state-officials-wonder-if-damage-from-small-quakes-weakens-buildings-general-news/>

ELECTRIC GENERATION

AP Investigation: US power grid vulnerable to foreign hacks (AP) <http://newsok.com/ap-investigation-us-power-grid-vulnerable-to-foreign-hacks/article/feed/938803>

Wind transmission proposal stands to benefit Oklahoma, workers (NewsOK) <http://newsok.com/wind-transmission-proposal-stands-to-benefit-oklahoma-workers/article/5467664>

Power plan: Transmission line could allow wind farm development in Panhandle (Journal Record) <http://journalrecord.com/2015/12/18/power-plan-transmission-line-could-allow-wind-farm-development-in-panhandle-energy/>

Construction could start in 2017 on wind transmission line (NewsOK) <http://newsok.com/construction-could-start-in-2017-on-wind-transmission-line/article/feed/938230>

Legal scholar: Northern Pass challenge faces stiff challenge (NewsOK) <http://newsok.com/legal-scholar-northern-pass-challenge-faces-stiff-challenge/article/feed/938569>

PIPELINE

Minnesota regulators set stage for oil pipeline reviews (AP) <http://www.miamiherald.com/news/business/article50381750.html>

OIL & GAS INDUSTRY

Energy executives in Oklahoma City praise congressional repeal of oil export ban (NewsOK) <http://newsok.com/energy-executives-in-oklahoma-city-praise-congressional-repeal-of-oil-export-ban/article/5467789>

Why the U.S. embargo on oil exports was lifted (Tulsa World) http://www.tulsaworld.com/business/energy/why-the-u-s-embargo-on-oil-exports-was-lifted/article_064f0f01-2345-5661-afa7-f973a8d98760.html

Tulsa energy firm files for bankruptcy protection (Tulsa World) http://www.tulsaworld.com/business/energy/tulsa-energy-firm-files-for-bankruptcy-protection/article_46b47c60-a47a-51f7-96f2-59cc9089732b.html

Lawmakers question delays in energy lease sales (AP) <http://www.newschannel10.com/story/30773136/lawmakers-question-delays-in-energy-lease-sales>

BP Lower 48 to buy Devon Energy assets in San Juan Basin in New Mexico and Colorado (NewsOK) <http://newsok.com/bp-lower-48-to-buy-devon-energy-assets-in-san-juan-basin-in-new-mexico-and-colorado/article/5467609>

Natural gas reserves expand as prices reach multiyear low (NewsOK) http://newsok.com/natural-gas-reserves-expand-as-prices-reach-multiyear-low/article/5467502?custom_click=columnist

UTILITIES

Odors from Porter Ranch gas leak are just doing their jobs – too well (LA Times) <http://www.latimes.com/local/california/la-me-adv-gas-leak-health-20151220-story.html>

Historic Los Angeles methane leak puts natural gas emissions under scrutiny (Utility Dive) <http://www.utilitydive.com/news/historic-los-angeles-methane-leak-puts-natural-gas-emissions-under-scrutiny/411060/>

ENERGY, ENVIRONMENT

The EPA's Secret Staff (Wall Street Journal) <http://www.wsj.com/articles/the-epas-secret-staff-1450483019>

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Monday, December 21, 2015 10:22 AM
To: Lawrence, Rob
Subject: RE: EnergyWire - Sandridge Energy to defy Oklahoma order to close injection wells

No surprise.

From: Lawrence, Rob
Sent: Monday, December 21, 2015 9:09 AM
To: Overbay, Michael; Dellinger, Philip; Dorsey, Nancy; Bates, William
Cc: Marks, Teresa
Subject: EnergyWire - Sandridge Energy to defy Oklahoma order to close injection wells

Hmmm

SandRidge defies Okla. directive to close wells, 12/21/15

<http://www.eenews.net/energywire/2015/12/21/stories/1060029814>

SandRidge Energy Inc., the financially troubled oil producer focused on earthquake-prone northern Oklahoma, is defying a state directive to shut down disposal wells linked to quakes. "They are in operation, and we are preparing a case" to formally shut the wells, Matt Skinner, spokesman for the Oklahoma Corporation Commission (OCC), said Friday. Skinner said SandRidge representatives told OCC they would "respectfully decline" to comply.

Rob Lawrence
Region 6
Policy Advisor - Energy Issues
214.665.6580

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Thursday, December 10, 2015 9:16 AM
To: 'Matt Skinner'
Subject: RE: From EnergyWire -- EARTHQUAKES: Former Okla. seismologist confirms pressure, conflicts of interest in TV interview

Thank you!

From: Matt Skinner [mailto:M.Skinner@occemail.com]
Sent: Thursday, December 10, 2015 9:03 AM
To: Dorsey, Nancy
Subject: RE: From EnergyWire -- EARTHQUAKES: Former Okla. seismologist confirms pressure, conflicts of interest in TV interview

I've added you to the "daily" news update I do for the OCC, not taken by many other entities on all levels of government. ("daily" means whenever I have time). Because of copyright laws, I can only provide links to certain subscription-only material, but hopefully you will still find it useful.
Matt

From: Dorsey, Nancy [mailto:Dorsey.Nancy@epa.gov]
Sent: Thursday, December 10, 2015 8:44 AM
To: Matt Skinner
Subject: RE: From EnergyWire -- EARTHQUAKES: Former Okla. seismologist confirms pressure, conflicts of interest in TV interview

At the meeting Monday afternoon, Charles said someone made that comment to him. No one in the room thought folks would want those jobs or the one down here.

From: Matt Skinner [mailto:M.Skinner@occemail.com]
Sent: Thursday, December 10, 2015 8:42 AM
To: Dorsey, Nancy
Subject: RE: From EnergyWire -- EARTHQUAKES: Former Okla. seismologist confirms pressure, conflicts of interest in TV interview

No one here thought that.

From: Dorsey, Nancy [mailto:Dorsey.Nancy@epa.gov]
Sent: Thursday, December 10, 2015 8:27 AM
To: Matt Skinner; Charles Lord; Tim Baker; Patricia Downey
Cc: James Phelps; Jim Marlatt; Laura Erichsen
Subject: FW: From EnergyWire -- EARTHQUAKES: Former Okla. seismologist confirms pressure, conflicts of interest in TV interview

And someone thought seismologists would be flocking for those OGS positions?

From: Bates, William
Sent: Wednesday, December 09, 2015 8:42 AM
To: Dorsey, Nancy; Dellinger, Philip

Subject: FW: From EnergyWire -- EARTHQUAKES: Former Okla. seismologist confirms pressure, conflicts of interest in TV interview

Did you all see this?

William J. L. Bates
Geologist
U.S. EPA
Office of Ground Water & Drinking Water: Prevention Branch
202-564-6165

From: branby.jill [mailto:email_this@eenews.net]

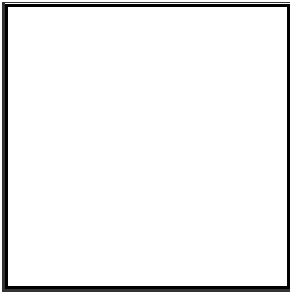
Sent: Wednesday, December 09, 2015 9:34 AM

To: Bates, William <bates.william@epa.gov>; Kobelski, Bruce <Kobelski.Bruce@epa.gov>; Carey, Kyle <Carey.Kyle@epa.gov>; Jollie, Jeff <Jollie.Jeff@epa.gov>

Subject: From EnergyWire -- EARTHQUAKES: Former Okla. seismologist confirms pressure, conflicts of interest in TV interview

This EnergyWire story was sent to you by: branby.jill@epa.gov

AN E&E PUBLISHING SERVICE	
<p>EARTHQUAKES: Former Okla. seismologist confirms pressure, conflicts of interest in TV interview</p> <p>Mike Soraghan, E&E reporter <i>Published: Wednesday, December 9, 2015</i></p> <p>In a soon-to-be-televised interview, former Oklahoma state seismologist Austin Holland confirmed industry pressure and conflicts of interest by state officials handling the swarms of quakes that have rattled the state.</p> <p>Talking with Al-Jazeera last summer on his last day working for the Oklahoma Geological Survey (OGS), Holland gave some of his most expansive comments about the difficulties involved in linking earthquakes to the state's most powerful industry.</p> <p>The interview is part of a story on Oklahoma's man-made earthquake swarms for the network's "Fault Lines" newsmagazine airing Sunday evening at 9 EST.</p>	



Former OGS seismologist Austin Holland in a TV interview confirmed industry pressure and conflicts of interest by state officials handling the swarms of quakes. Photo courtesy of Austin Holland.

In the interview, Holland said oil titan Harold Hamm told him to "watch how you say things" in a now-notorious "coffee" meeting in the office of University of Oklahoma President David Boren. He also said a position paper released in 2014, deeming the earthquakes to be natural, contradicted OGS's scientific understanding.

"This was to slow things down, to give the deniers more time to deny," Holland said. OGS is part of the university, which at the time was seeking a \$25 million donation from Hamm for a new building ([*EnergyWire*](#), June 23).

Holland also talked about the resources the state has put toward figuring out what is causing the earthquakes.

"I spoke to a homeowner in Oklahoma, and he said, 'You know, I think the amount of resources you're getting is a clear conspiracy to keep you from doing the work you need to do,'" Holland recalled. "I don't have any way to refute that."

Holland was at the center of the state's earthquake debate for most of the time he worked at the Oklahoma Geological Survey, which is housed at the University of Oklahoma. Scientists generally date the uptick in quakes to 2009, before Holland started working there in 2010.

OGS lagged behind federal and academic scientists in finding that the swarms of quakes were related to wastewater disposal from oil and gas operations. Holland said it was clear to him and others at OGS by 2013, but OGS didn't formally acknowledge it until April of this year ([*EnergyWire*](#), April 20).

"Fault Lines" correspondent Josh Rushing said he and his crew spent hours with Holland on his last day as he packed up boxes in his small basement office on the OU campus. Holland seemed "beleaguered," he said, after years of dealing with the earthquake swarms with little support.

"He was giving his whole life to this, and no one appreciated it," Rushing said.

Rushing asked Holland if it was appropriate for Hamm, founder and CEO of Continental Resources Inc., to tell him to mind his words. The meeting in Boren's office was first reported by *EnergyWire* in March ([*EnergyWire*](#), March 3).

"Well, there are a lot of people that were telling me I need to be careful how I say things," Holland said.

Hamm has said he wasn't trying to bully Holland but simply to learn what proof he had ([EnergyWire](#), May 11).

Holland seemed more concerned about the 2014 statement, which was drafted at the suggestion of Larry Grillot, a university dean who oversaw OGS. Grillot was helping solicit the \$25 million contribution from Hamm and also served on the board of Pioneer Natural Resources Co. ([EnergyWire](#), June 23). Pioneer owns coalbed methane wells in a part of Colorado where federal scientists say oil and gas activities are causing earthquakes. He's been paid at least \$600,000 by Pioneer since 2013.

"The dean of the college that directly oversees the OGS being a board member on an energy company," Holland said. "I see that as probably a clear conflict of interest."

Rushing reached Grillot by phone, and he declined to comment.

Scientists say the unprecedented swarms of man-made quakes in the state since 2009 can be attributed to favorably aligned faults and production methods that create uniquely large volumes of wastewater. This year, Oklahoma has had more than 800 quakes of magnitude 3 or greater, a substantial increase over the 585 in 2014.

Oklahoma officials say producers from CBS's "60 Minutes" newsmagazine have also been preparing a story on the state's earthquake situation.

Rushing tracked down Gov. Mary Fallin (R), who told him the state waited to acknowledge the cause of the quake swarms. "We wanted to wait and have scientific information based on facts," she said, "not just on hearsay." Documents obtained by [EnergyWire](#) show Fallin and her staff moved slowly on the earthquake issue even as the state was rattled more and more frequently ([EnergyWire](#), July 8).

Rushing also talked to activists, experts, rattled residents, state officials and industry representatives. Kim Hatfield of the Oklahoma Independent Petroleum Association acknowledged that industry activity is linked to the quakes.

But Hatfield said smaller quakes, such as those that register around magnitude 3, are less of a concern than larger ones.

"Having a 3 is kind of a 'So what,'" Hatfield told Rushing. "If I was sure there was never going to be anything bigger than a 3 that wasn't naturally occurring, my blood pressure would probably go down a lot."

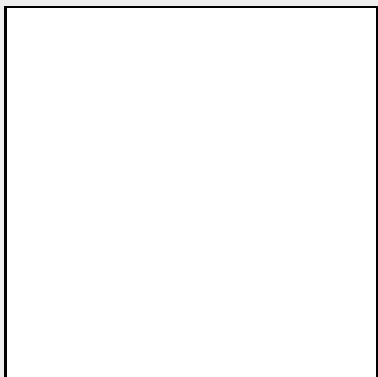
[Click here](#), [here](#) and [here](#) to see documents cited in the Al-Jazeera report.

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Dorsey, Nancy

From: Dorsey, Nancy
Sent: Sunday, December 06, 2015 3:28 PM
To: Dellinger, Philip; Vaughan, Michael
Subject: Draft EOY presentation
Attachments: OCC FY 2015 EOY Discussion.pptx

Importance: High

Phil,

I think if you or Jim give a brief intro then turn it over to me it will work better.

Mike,

DO you want to present the Grants slide if you can make the call?

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Thursday, December 03, 2015 4:22 PM
To: Honker, William
Cc: Dellinger, Philip
Subject: RE: earthquakes in Oklahoma
Attachments: EQ_into_12012015v2.jpg

Importance: High

Corrected copy

From: Honker, William
Sent: Thursday, December 03, 2015 3:50 PM
To: Dorsey, Nancy
Cc: Dellinger, Philip
Subject: RE: earthquakes in Oklahoma

Thanks. I don't think the legend is properly aligned on the copy I'm looking at, so I wasn't sure.

Bill

William K. Honker, P.E.
Director, Water Division (6WQ)
EPA Region 6
Dallas, TX
214-665-3187
<http://www.epa.gov/region6/water/index.htm>



From: Dorsey, Nancy
Sent: Thursday, December 03, 2015 3:35 PM
To: Honker, William; Dellinger, Philip
Subject: RE: earthquakes in Oklahoma

Year, notice the legend? Gold are from this year, the others are from 10/23/2009 through the end of 2014.

From: Honker, William
Sent: Thursday, December 03, 2015 3:33 PM
To: Dorsey, Nancy; Dellinger, Philip
Subject: RE: earthquakes in Oklahoma

What's the difference between the gold stars and the darker ones?

Bill

William K. Honker, P.E.
Director, Water Division (6WQ)
EPA Region 6
Dallas, TX
214-665-3187
<http://www.epa.gov/region6/water/index.htm>



From: Dorsey, Nancy
Sent: Thursday, December 03, 2015 3:20 PM
To: Dellinger, Philip; Honker, William
Subject: earthquakes in Oklahoma

Will the attached suit your needs? It needs a bit of cropping.

Nancy S. Dorsey
Environmental Scientist
Oklahoma Class II Program Manager
WQ-SG EPA Region 6
1445 Ross Ave. #1200
Dallas, TX 75202-2733
214-665-2294
FAX 214-665-2191

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Monday, November 30, 2015 2:24 PM
To: Fanning, Cynthia
Cc: Bates, William
Subject: RE: ALJ at OCC cites NTW report in findings - see appellate report

Sorry, yes that is. <http://www2.epa.gov/uic/underground-injection-control-national-technical-workgroup-final-issue-papers>

There is supposed to be a poster on the website as well, but apparently it got lost in the revision.

From: Fanning, Cynthia
Sent: Monday, November 30, 2015 2:18 PM
To: Dorsey, Nancy
Subject: RE: ALJ at OCC cites NTW report in findings - see appellate report

Oh, dear. I was looking for EPA's UIC NTW report *Minimizing and Managing Potential Impacts of Injection-Inducing Seismicity from Class II Disposal Wells: Practical Approaches*.

Is that out in the public realm?

Cynthia Fanning
Office of External Affairs
U.S. Environmental Protection Agency, Region 6
214-665-2142



From: Dorsey, Nancy
Sent: Monday, November 30, 2015 1:21 PM
To: Fanning, Cynthia
Subject: FW: ALJ at OCC cites NTW report in findings - see appellate report
Importance: High

Attached are the reports—I found them while reviewing order details. I renamed them.

From: Dorsey, Nancy
Sent: Friday, November 06, 2015 10:32 AM
To: R6 6WQ-SG; Gillespie, David
Cc: Bates, William; Hildebrandt, Kurt; Brown, Jamesr

26) Without rules or a recommendation from the Commission's technical experts, an ALJ runs the risk of acting in an arbitrary and capricious manner. In the absence of such rules and technical recommendations, the ALJ must then look to other objective and credible authorities for guidance in weighing the evidence.

27) The NTW report, decision model and recommendations for evaluating potential for injection-induced seismicity represent the kind of authority that can be relied upon by the ALJ and the Commission. The NTW report thus serves as a set of acceptable and clearly presented considerations that can be used to identify the information that should be presented to the Commission by an applicant.

28) The NTW report confirmed that the following components are necessary for significant injection-induced seismicity: (1) sufficient pressure buildup from disposal activities characterized by an increase in formation pore pressure; (2) faults of concern (denoting faults or zones of multiple faults optimally oriented for movement and located in a critically stressed region and of sufficient

and possessing sufficient accumulated stress / strain, such that fault slip movement has the potential to cause a significant earthquake); and (3) a pathway allowing the increased pressure to communicate with the fault. The report found that understanding the geologic characteristics of a site is an essential step in evaluating the potential for injection-induced seismicity and that the "application of basic petroleum engineering practices coupled with geology and geophysical information can provide a better understanding of reservoir and fault characteristics."

29) According to the NTW report, Petroleum engineering methods provide practical tools for evaluating the three key components that must all be present for induced seismicity to occur: (1) sufficient pressure buildup from disposal activities, (2) a Fault of Concern, and (3) a pathway allowing increased pressure to communicate from the disposal well to the fault.

Specifically, petroleum engineering methods typically focus on the potential reservoir pressure buildup and the reservoir flow pathways present around the well and at a distance, and characterize reservoir behavior during the well operation. Petroleum engineering approaches enhance geological and seismological interpretations related to the characterization of faults and fault behavior.

The petroleum engineering approach incorporates information typically collected from the permit application (well construction and completion details) and data on injection volumes and pressures reported for compliance purposes during operation of the well. This information is presented in a graph format to illustrate behavior of the well over time. These graphs are compared to graphs of expected well behavior from various reservoir behavior models to identify anomalous patterns.

Operational analysis consists of plotting readily available data reported as part of the Class II disposal well permit compliance. These plots include: 1) Injection volumes and wellhead pressures; 2) Bottomhole injection pressure gradient; and 3) Hall integral and derivative. Plotting injection volumes and pressures in an appropriate format along with operating pressure gradient may highlight significant changes in disposal well behavior. The operating pressure gradient plot can indicate whether a disposal well is operating above fracture gradient. The Hall integral and derivative plot utilizes operating data to characterize a well's long term hydraulic behavior by providing a long-term, long distance look into the disposal zone...Changes in Hall integral are

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derivative trends can represent reservoir heterogeneities (i.e., fault stratigraphic changes, etc.), changes in completion conditions, reservoir boundaries, and effects of offset wells.

Supplemental evaluations may be performed but require data or logs that may or may not be routine for Class II disposal permit activities. These evaluations quantitatively assess potential pathways and potential reservoir pressure buildup and may include the following: 1) Step rate tests; 2) Pressure falloff tests; 3) Production logs; and 4) Static reservoir pressure measurements. Step rate tests are used to determine the formation parting pressure (fracture extension pressure). The quality of the data analysis is dependent on the amount of pressure data recorded during the test. Pressure falloff tests can provide the completion condition of the well (wellbore skin) and reservoir flow characteristics. Production logs typically include temperature logs, noise log, radioactive tracer surveys, oxygen activation logs or spinner surveys. These types of logs are used to evaluate the fluid emplacement at the well. Periodic static pressure measurements provide an assessment of reservoir pressure buildup.

30) Based upon the NTW report, AEW has to provide significant evidence to the Commission that the components found necessary for significant injection-induced seismicity by the NTW are not present in the Arbuckle and Reagan formations and the Granite basement rock in the vicinity of the SWD well. The kind and type of evidence (i.e., 3-D seismic studies, reservoir pressure and volume calculations, bottomhole pressure measurements, Hall integral and derivative data and other operating data from nearby SWD wells such as those shown in Exhibit 12) are to be determined by the technical experts working for AEW and the Commission.

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Monday, November 30, 2015 1:21 PM
To: Fanning, Cynthia
Subject: FW: ALJ at OCC cites NTW report in findings - see appellate report
Attachments: ALJ_645418_refNTW.pdf; ALJ_645418_appellate.pdf

Importance: High

Attached are the reports—I found them while reviewing order details. I renamed them.

From: Dorsey, Nancy
Sent: Friday, November 06, 2015 10:32 AM
To: R6 6WQ-SG; Gillespie, David
Cc: Bates, William; Hildebrandt, Kurt; Brown, Jamesr
Subject: ALJ at OCC cites NTW report in findings - see appellate report
Importance: High

26) Without rules or a recommendation from the Commission's technical experts, an ALJ runs the risk of acting in an arbitrary and capricious manner. In the absence of such rules and technical recommendations, the ALJ must then look to other objective and credible authorities for guidance in weighing the evidence.

27) The NTW report, decision model and recommendations for evaluating potential for injection-induced seismicity represent the kind of authority that can be relied upon by the ALJ and the Commission. The NTW report thus serves as a set of acceptable and clearly presented considerations that can be used to identify the information that should be presented to the Commission by an applicant.

28) The NTW report confirmed that the following components are necessary for significant injection-induced seismicity: (1) sufficient pressure buildup from disposal activities characterized by an increase in formation pore pressure; (2) faults of concern (denoting faults or zones of multiple faults optimally oriented for movement and located in a critically stressed region and of sufficient

and possessing sufficient accumulated stress / strain, such that fault slip movement has the potential to cause a significant earthquake); and (3) a pathway allowing the increased pressure to communicate with the fault. The report found that understanding the geologic characteristics of a site is an essential step in evaluating the potential for injection-induced seismicity and that the "application of basic petroleum engineering practices coupled with geology and geophysical information can provide a better understanding of reservoir and fault characteristics."

29) According to the NTW report, Petroleum engineering methods provide practical tools for evaluating the three key components that must all be present for induced seismicity to occur: (1) sufficient pressure buildup from disposal activities, (2) a Fault of Concern, and (3) a pathway allowing increased pressure to communicate from the disposal well to the fault.

Specifically, petroleum engineering methods typically focus on the potential reservoir pressure buildup and the reservoir flow pathways present around the well and at a distance, and characterize reservoir behavior during the well operation. Petroleum engineering approaches enhance geological and seismological interpretations related to the characterization of faults and fault behavior.

The petroleum engineering approach incorporates information typically collected from the permit application (well construction and completion data) and data on injection volumes and pressures reported for compliance purposes during operation of the well. This information is presented in a graph format to illustrate behavior of the well over time. These graphs are compared to graphs of expected well behavior from various reservoir behavior models to identify anomalous patterns.

Operational analysis consists of plotting readily available data reported as part of the Class II disposal well permit compliance. These plots include: 1) Injection volumes and wellhead pressures; 2) Bottomhole injection pressure gradient; and 3) Hall integral and derivative. Plotting injection volumes and pressures in an appropriate format along with operating pressure gradient may highlight significant changes in disposal well behavior. The operating pressure gradient plot can indicate whether a disposal well is operating above fracture gradient. The Hall integral and derivative plot utilizes operating data to characterize a well's long term hydraulic behavior by providing a long-term, long distance look into the disposal zone...Changes in Hall integral are

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derivative trends can represent reservoir heterogeneities (i.e., fault stratigraphic changes, etc.), changes in completion conditions, reservoir boundaries, and effects of offset wells.

Supplemental evaluations may be performed but require data or logs that may or may not be routine for Class II disposal permit activities. These evaluations quantitatively assess potential pathways and potential reservoir pressure buildup and may include the following: 1) Step rate tests; 2) Pressure falloff tests; 3) Production logs; and 4) Static reservoir pressure measurements. Step rate tests are used to determine the formation parting pressure (fracture extension pressure). The quality of the data analysis is dependent on the amount of pressure data recorded during the test. Pressure falloff tests can provide the completion condition of the well (wellbore skin) and reservoir flow characteristics. Production logs typically include temperature logs, noise log, radioactive tracer surveys, oxygen activation logs or spinner surveys. These types of logs are used to evaluate the fluid emplacement at the well. Periodic static pressure measurements provide an assessment of reservoir pressure buildup.

30) Based upon the NTW report, AEW has to provide significant evidence to the Commission that the components found necessary for significant injection-induced seismicity by the NTW are not present in the Arbuckle and Reagen formations and the Granite basement rock in the vicinity of the SWD well. The kind and type of evidence (i.e., 3-D seismic studies, reservoir pressure and volume calculations, bottomhole pressure measurements, Hall integral and derivative data and other operating data from nearby SWD wells such as those shown in Exhibit 12) are to be determined by the technical experts working for AEW and the Commission.

Dorsey, Nancy

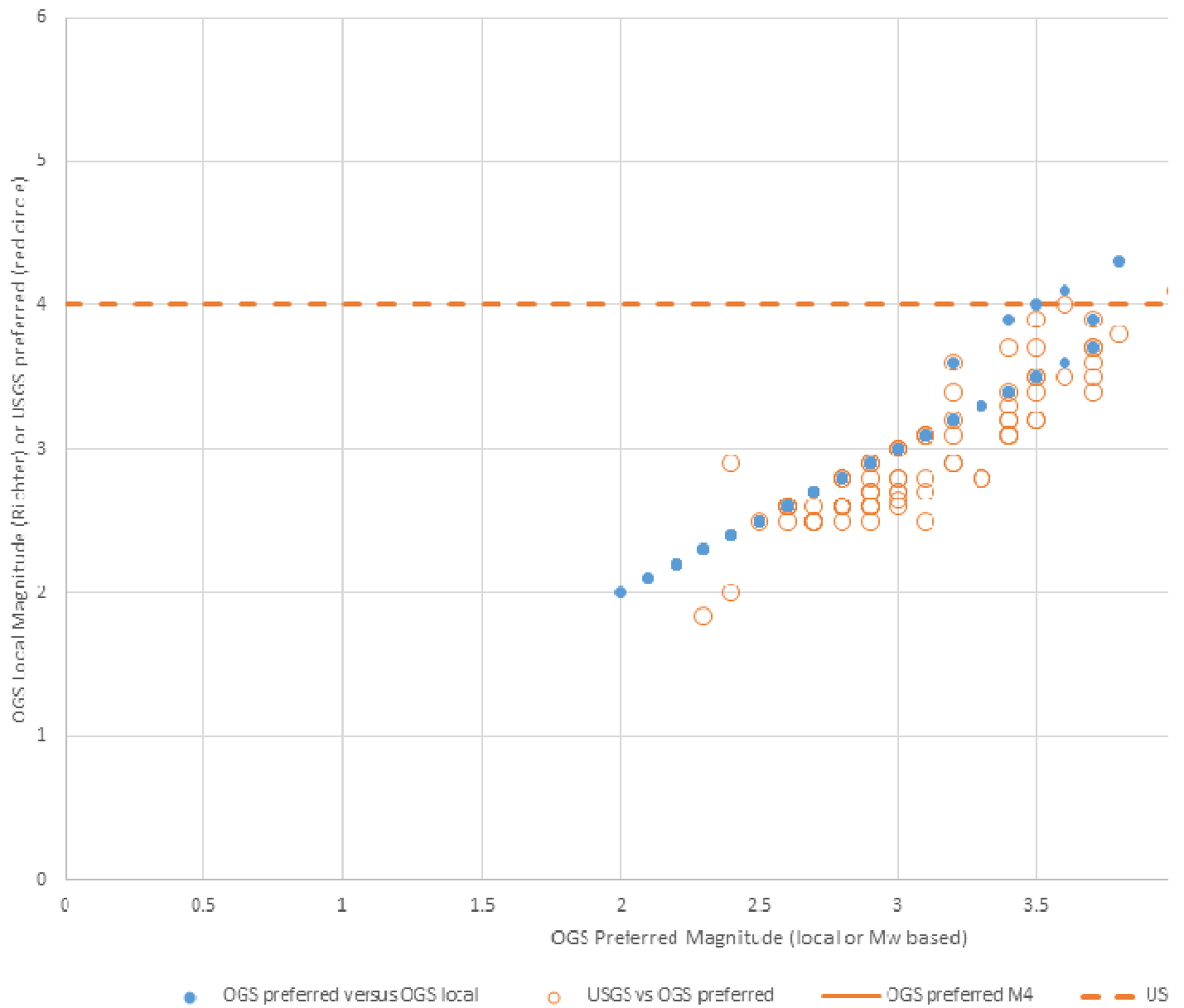
From: Dorsey, Nancy
Sent: Wednesday, November 25, 2015 1:55 PM
To: Dellinger, Philip; Overbay, Michael
Cc: Charles Lord; Tim Baker; Patricia Downey; Matt Skinner; Johnson, Ken-E
Subject: OK magnitude 4+ in November

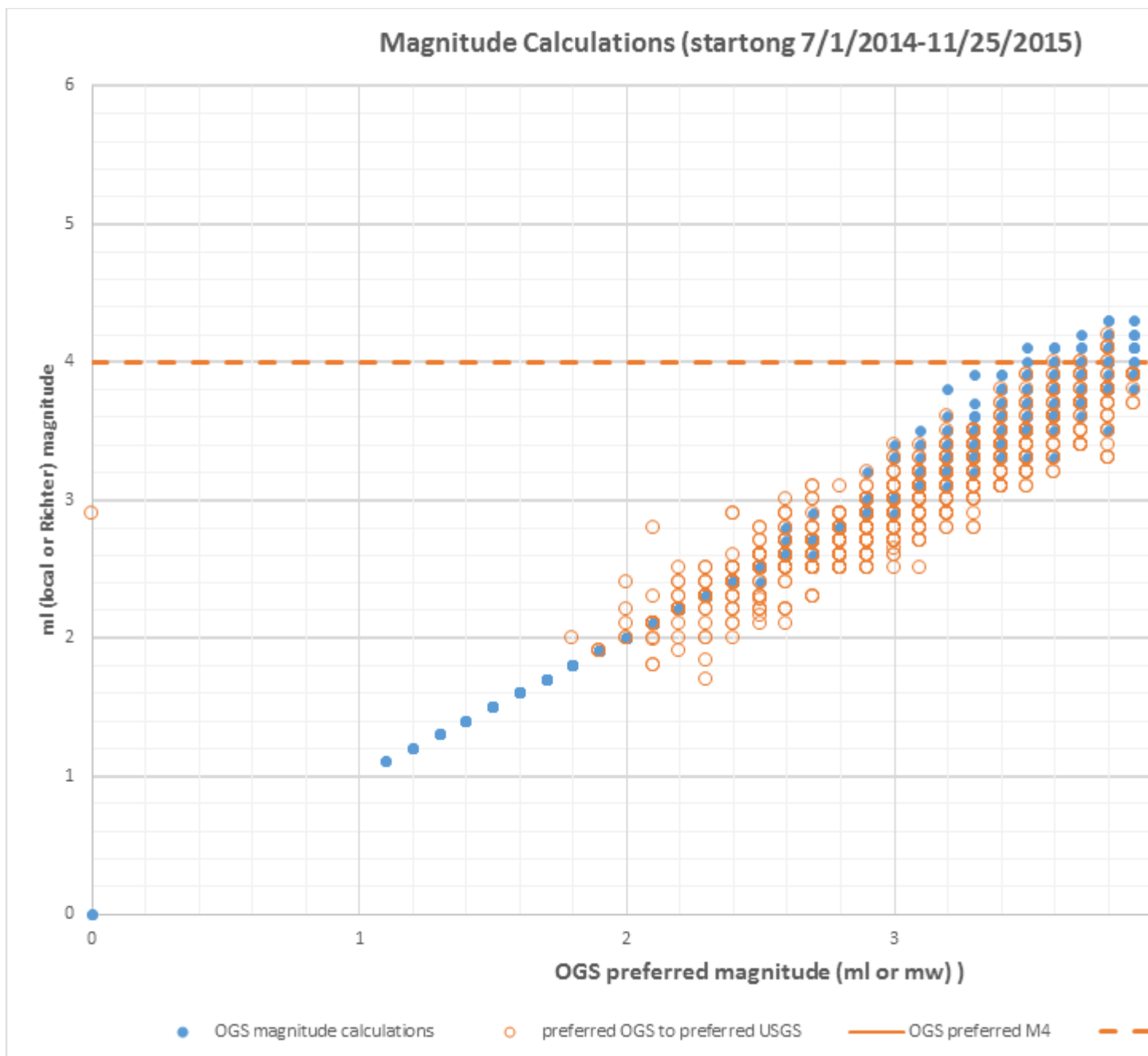
Interesting comparison, it shows just how subjective the science is in calculating earthquake magnitudes. USGS had another M4 yesterday in Cherokee, while OGS says 3.6M.

events >= M4

- OGS preferred magnitude calculations = 5
- OGS local magnitude calculations = 8, including one over M5
- USGS preferred magnitude calculations = 5

Oklahoma November 2015 Earthquakes





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 Oklahoma Class II Program Manager
 WQ-SG EPA Region 6
 1445 Ross Ave. #1200
 Dallas, TX 75202-2733
 214-665-2294
 FAX 214-665-2191

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Monday, November 23, 2015 12:34 PM
To: Johnson, Ken-E; Dellinger, Philip; Lawrence, Rob; Graves, Brian; Bierschenk, Arnold; Overbay, Michael
Cc: Hildebrandt, Kurt; Bates, William
Subject: RE: earthquake article

Great article, especially if you skip the lead-in infomercial by OERB. My favorite quote by Matt Skinner, 'We are doing all we can do.' Technically true.

From: Johnson, Ken-E
Sent: Monday, November 23, 2015 12:23 PM
To: Dorsey, Nancy; Dellinger, Philip; Lawrence, Rob; Graves, Brian; Bierschenk, Arnold; Overbay, Michael
Cc: Hildebrandt, Kurt
Subject: earthquake article

<http://kfor.com/2015/11/23/only-a-matter-of-time-before-the-big-one-shakes-oklahoma/>

Ken Johnson, P.E.
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Dallas, Texas 75202
Johnson.ken-e@epa.gov
214-665-8473
972-754-4991 (cell)

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Tuesday, November 17, 2015 12:52 PM
To: Aguinaga, David
Cc: Hurlbut, Bill
Subject: Arbuckle wells with no latitude longitude - or some other key entries

qry_INVENTORY_DD_Locations_Arbuckle						
COUNTY_NAME	UICDI_WELL_CLASSES.DESCRPT	INVENTORY_ID	PROJECT_NAME	LEASE_NAME	WELLID	UICDI_WELL_STATUS
OSAGE	Class II Well	OS1035000	PETTIT		10	Inactive
OSAGE	Class II Well	OS4057000	RAMONA		9	Active
OSAGE	Class II Well	OS5982000	CEJA CORPORATION		COLBY 3	Active

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Dorsey, Nancy

From: Dorsey, Nancy
Sent: Tuesday, November 17, 2015 11:31 AM
To: Hurlbut, Bill; Aguinaga, David
Cc: Tingey, Christopher; Overbay, Michael; Dellinger, Philip
Subject: DI UIC Arbuckle permits

WRT earthquakes and deep injection in the DI permits: so far as I can tell, there is only one active Arbuckle permit outside Osage County. However, not all the permits have formation codes and county names filled in the database entry.

The one is OK9073 in Lincoln County, which is also permitted by OCC (way back when). API: 081-21248

Does this match your searches?

Thanks,
Nancy

Nancy S. Dorsey
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FAX 214-665-2191

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Monday, November 16, 2015 8:32 AM
To: Brown, Jamesr
Cc: Hurlbut, Bill; Overbay, Michael; Dellinger, Philip
Subject: Indian land injection in Cushing area

Importance: High

BLM called, some of the wells in the OCC cutback areas are on Indian lands. Will update when I have more info.

Nancy S. Dorsey
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Dallas, TX 75202-2733
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FAX 214-665-2191

Dorsey, Nancy

From: Dorsey, Nancy
Sent: Wednesday, September 23, 2015 9:39 AM
To: Overbay, Michael
Subject: RE: EARTHQUAKE EXPLOSION: State's seismic surge opened floodgates of data, cooperation & Corporation Commission Turns Away 5 Disposal Well Applications

You mean like it says in the third story link?

From: Overbay, Michael
Sent: Wednesday, September 23, 2015 9:36 AM
To: Hildebrandt, Kurt; Dorsey, Nancy; Dellinger, Philip
Cc: Bierschenk, Arnold; Frazier, Mike; Graves, Brian; Johnson, Ken-E; Bates, William; Lawrence, Rob; Kobelski, Bruce; Bayer, MaryRose
Subject: RE: EARTHQUAKE EXPLOSION: State's seismic surge opened floodgates of data, cooperation & Corporation Commission Turns Away 5 Disposal Well Applications

FYI – earthquakes in the Cushing, OK, area have been hitting the 4's lately. I assume that explains why those wells are stopping operations.

Michael Overbay
Regional Ground Water Center Coordinator
US Environmental Protection Agency, Region 6
(214)665-6482

From: Hildebrandt, Kurt
Sent: Wednesday, September 23, 2015 9:34 AM
To: Dorsey, Nancy; Dellinger, Philip
Cc: Bierschenk, Arnold; Frazier, Mike; Graves, Brian; Johnson, Ken-E; Overbay, Michael; Bates, William; Lawrence, Rob; Kobelski, Bruce; Bayer, MaryRose
Subject: RE: EARTHQUAKE EXPLOSION: State's seismic surge opened floodgates of data, cooperation & Corporation Commission Turns Away 5 Disposal Well Applications

Earthquakes, explosions, surging, floodgates....good gosh sounds like a Michael Bay movie.

Transform Faults* – Revenge of the injected

- - Only available along the Pacific Coast in the US

From: Dorsey, Nancy
Sent: Wednesday, September 23, 2015 9:19 AM
To: Honker, William <honker.william@epa.gov>; Brown, Jamesr <brown.jamesr@epa.gov>; Dellinger, Philip <dellinger.philip@epa.gov>
Cc: Garcia, David <Garcia.David@epa.gov>; R6 6WQ-SG <R6_6WQSG@epa.gov>; Bates, William <bates.william@epa.gov>; Hildebrandt, Kurt <Hildebrandt.Kurt@epa.gov>; Lawrence, Rob <Lawrence.Rob@epa.gov>
Subject: EARTHQUAKE EXPLOSION: State's seismic surge opened floodgates of data, cooperation & Corporation Commission Turns Away 5 Disposal Well Applications

http://www.enidnews.com/news/local_news/earthquake-explosion/article_75b43a9a-dfdb-5f82-bb12-af6578006780.htmlhttp://www.enidnews.com/news/local_news/earthquake-explosion/article_75b43a9a-dfdb-5f82-bb12-af6578006780.html

<http://www.news9.com/story/30092566/corporate-commission-turned-away-5-disposal-well-applications> "OKLAHOMA CITY - Another sign that it's no longer business as usual for many oil and gas companies here in earthquake-rich Oklahoma: five disposal well applications were turned away at Tuesday morning's meeting of the Oklahoma Corporation Commission."

<http://www.news9.com/story/30064980/2-cushing-disposal-wells-shut-down-following-earthquakes> CUSHING, Oklahoma - Two wastewater disposal wells will stop operations in Cushing, Oklahoma, following a series of earthquakes that hit the area, according to the Oklahoma Corporation Commission.